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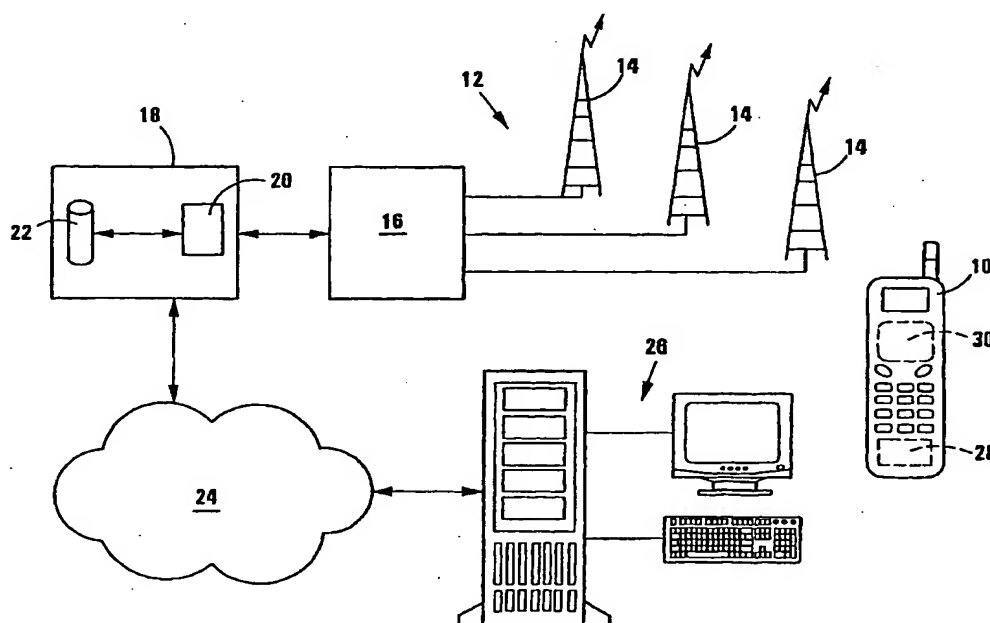
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[Continued on next page]

(54) Title: **METHOD FOR BACKING UP DATA STORED IN A MOBILE PHONE**



(57) Abstract: This invention relates to a method of backing up data in a mobile telephone, in which data is transmitted from the telephone device to a storage means via a telephone network. The invention extends to a telephone device having a transmitting means for transmitting data. The device is optionally provided with application software for controlling connection to a back up facility and the transfer of data to- and from the back up storage means. The back up facility has a receiving data from the telephone device via the telephone network and a storage means.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

METHOD FOR BACKING UP DATA STORED IN A MOBILE PHONE

This invention relates to the backing up of data from mobile telephone devices and the restoration of data thereto.

According to a first aspect of the invention there is provided a method of backing up data in a mobile telephone device, which includes

transmitting data from the telephone device to a storage means via a telephone network.

Further according to the first aspect of the invention there is provided a telephone device which includes

a transmitting means for transmitting data in the telephone device to a back up storage means via a telephone network.

The device may be a personal digital assistant (PDA) with telephone connectivity.

The data may be resident in a memory module of the telephone device or in an

auxiliary memory module, such as a SIM card, associated with the telephone device.

According to a second aspect of the invention there is provided a method of backing up data from a mobile telephone device, which includes

receiving data from the telephone device via a telephone network; and
storing the data on a back up storage means.

Further according to the second aspect of the invention there is provided a back up facility for backing up data from a mobile telephone device, which includes

a receiving means for receiving data from the telephone device via a telephone network; and

a storage means for storing the received data.

The data may be backed up automatically. This may be triggered by an initiating means in the telephone device or at the back up facility.

The invention extends to application software for the telephone device for controlling connection to the back up facility and the transfer of data to and from the back up storage means. The software may be supplied to the telephone device from the back up facility, also via the telephone network.

The telephone network may be a cellular network.

Data may be transferred to and from the telephone device by means of SMS, GPRS, GSM Data Call, or any other suitable way, depending on the type of network used. The software may be supplied to the telephone device in a similar manner. The software may also be downloaded via a wireless network, such as BlueTooth, or from the internet, or via infrared. The back up procedure may also be initiated from the back up facility by means of an SMS message, or the like.

Data may be transferred in an encrypted manner. Thus, the software may have encryption and de-cryption capability.

The telephone device may be a simple handset, or it may be more sophisticated and have other functionalities, such as a calendar function, an address book, word processing and spreadsheet capability, and the like. Similarly, the device may be a personal digital assistant with telephone connectivity.

Data that is backed up may be the names and telephone numbers stored in the telephone device, calendar data, addresses, files, notes, tasks, graphics, and the like.

It will be appreciated that the first time data is backed up, all the data in the telephone device will be transferred to the back up facility. Thereafter, if the telephone device has sufficient memory, the application software may be such that it identifies only changes that have been made to the data since the last back up and

only the changes are transmitted to the back up facility, these changes being stored at the back up facility as patches. Instead, all the data may be transferred every time and the changes that have been made to the data since the previous back up may then be determined at the back up facility and the changes stored as patches. The bandwidth of the telephone network will also determine whether all the data is transmitted from the telephone device to the back up facility or only the changes.

A synchronizing facility may also be provided. The data stored at the back up facility may then be accessible via the telephone network from a different device, or in another way such as via the Internet, so that the data may be suitably modified. Conveniently, the data for several devices may be simultaneously varied by an authorized person.

The data stored on the back up storage means may also be accessed by an operator of the telephone network. Thus, data may be personalized and flagged in a value added manner. For example, telephone numbers associated with a subscriber account may be flagged as being business or personal numbers and accounts may then separate calls and their associated costs to the two groups.

The invention extends further to a mobile telephone device that has been programmed with the software as aforementioned. The software may be resident in the memory module of the telephone device or the SIM card used therewith.

The invention extends still further to a carrier which has the software described above thereon.

The invention will now be described, by way of an example, with reference to the accompanying drawing which illustrates the invention schematically.

Referring to the drawing, a GSM telephone handset 10 is shown. The handset 10 interacts with a cellular telephone network 12 which includes a number of cells 14 connected to a central exchange 16. Administration of the network and billing of subscribers is also performed at the exchange 16.

The exchange is also connected to a back up facility 18. The back up facility 18 has a controller 20 and a storage device 22. The back up facility 18, in turn, is connected to the Internet 24 via an ISP (not shown) or the like. A computer station 26, associated with the owner of the handset 10, is also connected to the Internet 24 via an ISP (also not shown).

The handset 10 has a SIM card 28 and a processor and internal memory 30. Data such as names and phone numbers is stored on the SIM card 28 and the memory 30. Other data, such as addresses, information associated with the stored names, appointments, notes, tasks, files, etc may also be stored in the internal

memory 30, depending on the sophistication and functionality of the handset 10.

The SIM card 28 also has stored thereon application software to perform a back up operation to back up the data in the SIM card 28 and the internal memory 30 to the back up facility 18, via the telephone network 12. The application software is downloaded to the handset 10 via the telephone network from the back up facility 18.

Thus, in operation, at regular intervals, the controller 20 of the back up facility 18 sends an SMS message to the handset 10 which initiates the back up procedure. On receipt of the initiating signal, the application software causes the handset 10 to call an appropriate number which connects the handset to the back up facility 18 via the network 12 and data is transmitted to the back up facility 18 and stored on the storage device 22. The data is transmitted in an encrypted form. As discussed above, depending on the size of the memory on the SIM card 28 and/or the internal memory 30, and the bandwidth of network 12, either all the data or only the changes that have taken place since the last download, are transmitted. If a user of the handset loses his data, he can upload it from the back up facility 18 via the network 12.

It will be appreciated that with a personal digital assistant having telephone connectivity or a more sophisticated handset 10, the application software to perform the back up operation may be stored in either the SIM card 28 or the internal memory 30 thereof.

The user of the handset 10 can also modify and access his data stored on the storage device 22 from the computer station 26, via the Internet 24. Clearly, this could be done from any location. The application software resident in the handset 10 may then also synchronize the data thereon with the data stored at the back up facility 18. If the handset 10 is used for business purposes, then the data stored in the back up facility 18 for a number of handsets 10 used by employees of the business could all be modified and updated by a supervisor. The supervisor, or the user, could also flag numbers to indicate if they are business or personal in nature. The network administrator could then access the data stored at the back up facility for each subscriber and personalize each subscribers account.

CLAIMS:

1. A method of backing up data in a mobile telephone device, which includes transmitting data from the telephone device to a storage means via a telephone network.
2. The method as claimed in Claim 1, in which the data to be transmitted is resident in a memory module of the telephone device.
3. The method as claimed in Claim 1, in which the data to be transmitted is resident in a SIM card, associated with the telephone device.
4. The method as claimed in Claim 1, in which the telephone network is a cellular network.
5. The method as claimed in Claim 1, in which the transmission of data includes the steps of
 - detecting changes that have been made to the data in the telephone device since the last back up;
 - transmitting only the changes which have been made to the data, to the storage means; and
 - storing the changes in the storage means as patches.

6. A method of backing up data in a mobile telephone device, which includes receiving data from the telephone device via a telephone network; and storing the data in a back up storage means.
7. The method as claimed in Claim 6, in which the telephone network is a cellular network.
8. The method as claimed in Claim 6, in which only changes which were made to the data in the telephone device since a previous back up are received and are stored in the storage means as patches.
9. The method as claimed in Claim 6, in which all the data in the telephone device is received, changes that have been made to the data since a previous back up are determined at the storage means and the changes stored therein as patches.
10. The method as claimed in Claim 6, in which the data is received in an encrypted manner.
11. The method as claimed in Claim 6, in which the storage means is located at a back up facility and a transmitting means of a telephone device is operated by means of an initiating signal from the back up facility.

12. The method as claimed in Claim 6, in which data is received by means of SMS, GPRS, or GSM Data Call technology.

13. The method claimed in Claim 6, which includes transferring data from the storage means to the telephone device via the telephone network.

14. The method claimed in Claim 6, in which the data stored in the storage means is modified from a device other than the telephone device.

15. The method claimed in Claim 14, in which the data in the telephone device is synchronized with the data in the storage means.

16. A telephone device which includes
a transmitting means for transmitting data in the telephone device to a back up storage means via a telephone network.

17. The telephone device as claimed in Claim 16, in which the transmitting means transmits, in use, the data resident in a memory module of the telephone device.

18. The telephone device as claimed in Claim 16, in which the transmitting means transmits, in use, data resident in a SIM card associated with the telephone device.

19. The telephone device as claimed in Claim 16, which is a personal digital assistant with telephone connectivity.
20. The telephone device of Claim 16, which includes a detecting means for detecting changes that have been made to the data therein since a last back up, and the transmitting means is such that only the changes which have been made to the data is transmitted to the storage means.
21. The telephone device of Claim 16, which includes an encrypting means for encrypting data to be transmitted to the storage means.
22. The telephone device as claimed in Claim 16, which includes an initiating means for automatically operating the transmitting means in a predetermined manner.
23. The telephone device as claimed in Claim 16, in which the transmitting means is responsive to an initiating signal from a back up facility.
24. The telephone device as claimed in Claim 16, in which the transmitting means transmits data by means of SMS, GPRS, or GSM Data Call technology.
25. The telephone device as claimed in Claim 16, which includes a receiving means for receiving data from the storage means via the telephone network.

26. The telephone device as claimed in Claim 25, which includes a synchronizing means for synchronizing data in the storage means with data in the telephone device.

27. The telephone device as claimed in any one of Claims 16 to 26, which has functionalities selected from the group consisting of a calendar function, an address book, word processing, spreadsheet capability, and graphics capability.

28. A back up facility for backing up data from a mobile telephone device, which includes

a receiving means for receiving data from the telephone device via a telephone network; and

a storage means for storing the received data.

29. The back up facility as claimed in Claim 28, which includes an initiating means for generating an initiating signal, and a transmitting means for transmitting the initiation signal to the telephone device.

30. The back up facility as claimed in Claim 28, which includes a patch storing arrangement for storing changes that have been made to the data in the telephone device since a previous back up, as patches.

31. The back up facility as claimed in Claim 30, which includes a change

determining means for determining changes made to the data received from the telephone device since a previous back up, the patch storing arrangement being responsive thereto.

32. The back up facility as claimed in Claim 28, in which the data is stored in an encrypted manner.

33. The back up facility as claimed in Claim 28, in which the data is receivable by means of SMS, GPRS, or GSM Data Call technology.

34. The back up facility as claimed in Claim 28, which includes a transmitting means for transmitting data from the storage means to the telephone device via the telephone network.

35. The back up facility as claimed in Claim 28, which is accessible from a device other than the telephone to modify the data stored in the storage device that is associated with a particular telephone device.

36. The back up device as claimed in Claim 35, which includes a synchronizing means for synchronizing the data stored in the telephone device with the modified data stored in the storage means.

37. Application software for a telephone device as claimed in any one of Claims 16 to 27, for controlling connection to a back up facility and the transfer of data to and from a back up storage means.

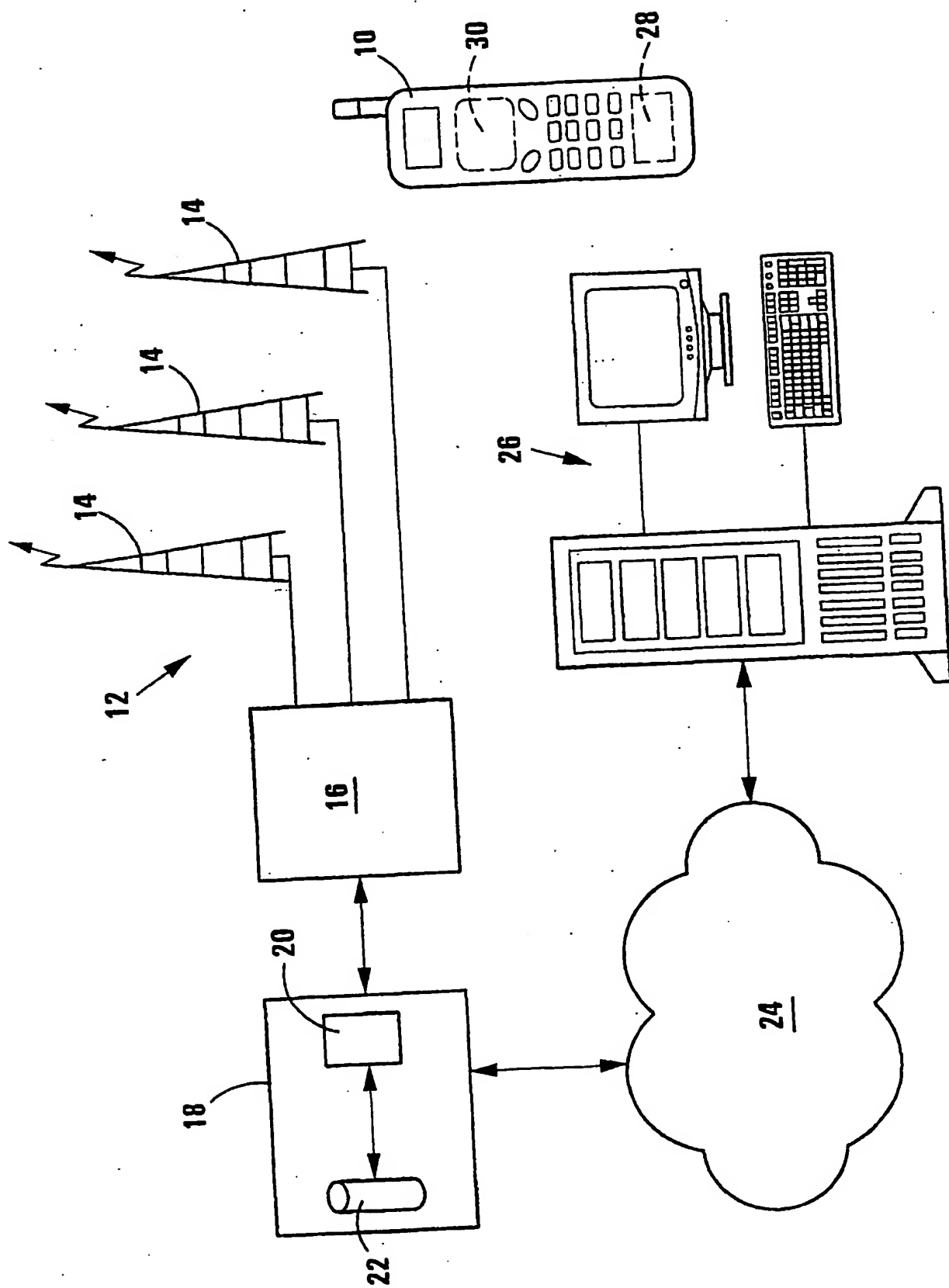
38. Software as claimed in Claim 37, which is supplied to the telephone device from the back up facility, via the telephone network.

39. Software as claimed in Claim 37, which has an encryption and decryption capability.

40. Software as claimed in Claim 37, with a change determining means for determining changes that have been made to the data since a previous back up, and with the transmitting means being such as to transmit only the changes.

41. A carrier which has the software as claimed in any one of Claims 37 to 40 thereon.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category * Citation of document, with indication, where appropriate, of the relevant passages

Relevant to claim No.

X WO 01 62029 A (SARSKOG JOHAN)
23 August 2001 (2001-08-23)

1-4, 6, 7,
10, 12,
13,
16-18,
21, 22,
24, 25,
28, 29,
32-34,
37-39, 41

page 1, line 31 -page 3, line 33

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- *G* document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim No.
Category *	Citation of document, with indication, where appropriate, of the relevant passages	
X	<p>WO 01 60096 A (SHEAHAN RORY ANTHONY) 16 August 2001 (2001-08-16)</p> <p>the whole document -----</p>	<p>1-4, 6, 7, 10, 12, 13, 16-18, 21, 22, 24, 25, 28, 29, 32-34, 37-39, 41</p>

INTERNATIONAL SEARCH REPORT

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			WO	0162029 A1	23-08-2001
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			EP	1256244 A1	13-11-2002
			WO	0160096 A1	16-08-2001
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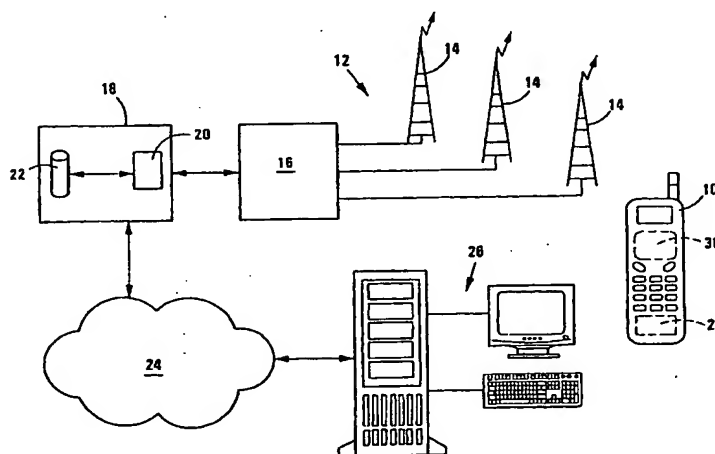
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(54) Title: METHOD FOR BACKING UP DATA STORED IN A MOBILE PHONE



(57) Abstract: This invention relates to a method of backing up data in a mobile telephone, in which data is transmitted from the telephone device to a storage means via a telephone network. The invention extends to a telephone device having a transmitting means for transmitting data. The device is optionally provided with application software for controlling connection to a back up facility and the transfer of data to- and from the back up storage means. The back up facility has a receiving data from the telephone device via the telephone network and a storage means.

AMENDED CLAIMS

[received by the International Bureau on 17 April 2003 (17.04.2003);
original claims 1-41 replaced by amended claims 1-17 (4 pages:)]

1. A method of backing up data in a mobile telephone device, which includes storing changes that have been made to the data in the telephone device since a previous back up, in a storage means as patches.
2. The method as claimed in Claim 1, in which the data backed up is resident in a memory module of the telephone device.
3. The method as claimed in Claim 1, in which the data backed up is resident in a SIM card, associated with the telephone device.
4. The method as claimed in Claim 1, in which the changes that have been made to the data are transmitted from the telephone device to the storage means, via a telephone network.
5. The method as claimed in Claim 1, in which the data is received, changes that have been made to the data since the previous back up are determined at the storage means and these changes are stored.
6. A telephone device which includes
a detecting means for detecting changes that have been made to data in the telephone device since a previous back up, and
a transmitting means for transmitting the changes to a storage means.

7. The telephone device as claimed in Claim 6, in which the detecting means detects changes made to data resident in a memory module of the telephone device.
8. The telephone device as claimed in Claim 6, in which the detecting means detects changes made to data resident in a SIM card associated with the telephone device.
9. The telephone device as claimed in any one of Claims 6 to 8, which has functionalities selected from the group consisting of a calendar function, an address book, word processing, spreadsheet capability, and graphics capability.
10. The telephone device as claimed in any one of Claims 6 to 8, which is a personal digital assistant with telephone connectivity.
11. Application software for a telephone device as claimed in any one of Claims 6 to 10, for controlling connection to a back up facility and the transfer of data to and from a back up storage means, which includes a change determining means for determining changes that have been made to the data since a previous back up and for transmitting only the changes to a back up storage means.
12. A back up facility for backing up data from a mobile telephone device via a telephone network, which includes
a receiving means for receiving data from the telephone device via a

telephone network; and

a patch storing arrangement for storing changes that have been made to the data in the telephone device since a previous back up, as patches.

13. A method of backing up data in a mobile telephone device, which includes receiving a back up initiating signal via a telephone network; and transmitting data to be backed up, in response to the initiating signal, to a back up storage means, via a telephone network.

14. A telephone device which includes an initiating signal detecting means for detecting a back up initiating signal received, in use, via a telephone network, and a transmitting means for transmitting data in the telephone device to a back up storage means via a telephone network, in response to an initiating signal detected by the detecting means.

15. A method of maintaining data in a mobile telephone device, which includes synchronising data in the telephone device with back up data stored in a back up facility that has been modified from a further device.

16. A telephone device which includes a synchronising means for synchronising data in the telephone device with back up data stored in a back up facility that has been modified from a further device.

17. A back up facility for backing up data from a mobile telephone device, which includes

a receiving means for receiving data from the telephone device via a telephone network; and

a storage means for storing the received data,

characterised thereby that the storage means is accessible from a further device to modify the data stored in the storage device.

